(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 15 April 2004 (15.04.2004)

PCT

(10) International Publication Number WO 2004/031348 A2

(51) International Patent Classification7:

C12N

(21) International Application Number:

PCT/US2003/030155

(22) International Filing Date:

24 September 2003 (24.09.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/413,673

24 September 2002 (24.09.2002) US

(71) Applicant (for all designated States except US): THE GOVERNMENT OF THE UNITED STATES OF AMERICA as represented by THE SECRETARY OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES [US/US]; National Institutes of Health, Office of Technology Transfer, Suite 325, 6011 Executive Boulevard, Rockville, MD 20852-3804 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): OLDFIELD, Edward, H. [US/US]; P.O. Box 309, Philomont, VA 22131 (US). LONSER, Russell, R. [US/US]; 10611 Mantz Road, Silver Spring, MD 20903 (US). GARMESTANI, Kayhan [US/US]; 11208 Hurdle Hill Drive, Potomac, MD 20854 (US). BRECHBIEL, Martin, W. [US/US]; 3404 Monarch Lane, Annandale, VA 22003-1155 (US).

(74) Agent: NOONAN, William, D.; Klarquist Sparkman, LLP, One World Trade Center, Suite 1600, 121 SW Salmon Street, Portland, OR 97204 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR CONVECTION ENHANCED DELIVERY OF THERAPEUTIC AGENTS

(57) Abstract: A method for monitoring and controlling convection enhanced delivery of a therapeutic agent to a target tissue is disclosed. A tracer that is detectable, for example, by magnetic resonance imaging (MRI) and/or by X-ray computed tomography (CT) is co-infused with the therapeutic agent and used to monitor the distribution of the therapeutic agent as it moves through the target tissue. The images obtained during delivery are used to confirm delivery of the therapeutic agent to the target tissue and to avoid exposure of tissue outside of the targeted area to the therapeutic agent. In addition, the signal intensity of the images may be used to confirm that the therapeutic agent has been delivered to the target tissue at a desired concentration.

